Pulmonary nodule biopsy: also consider bronchoscopic techniques

Sir,

The recent review of imaging incidental pulmonary nodules (vol 73(11), 2012, p. 620) briefly discussed invasive diagnostic tests when contemplating biopsy including radiologically-guided and thoracoscopic and surgical options. However, it is worth remembering that there are existing and future alternatives.

Bronchoscopy has often been hindered by the inability to directly visualize peripheral lesions. Nevertheless, traditionally, transbronchial biopsy, bronchoalveolar lavage and brush biopsy have been used for peripheral lesions with varying yields (65%, 43% and 54% respectively, albeit for lesions of all sizes) with or without fluoroscopy (Hergott and Tremblay, 2010). Transbronchial biopsy is limited by the well-recognized complications of pneumothorax and bleeding (British Thoracic Society Guidelines Committee, 2001), but bronchoalveolar lavage can occasionally cause pneumothorax too (Jeyabalan and Medford, 2012).

More recently, there have been an increasing number of bronchoscopic options including radial endobronchial ultrasound, ultrathin bronchoscopy, electromagnetic navigation and cryobiopsy (Silvestri et al, 2012). Radial endobronchial ultrasound has achieved yields of 73% (Steinfort et al, 2011) using a guide sheath and 20 MHz radial probe via a bronchoscope. The yield can be increased at radial endobronchial ultrasound by adding transbronchial needle aspiration to the existing forceps biopsy, brush or bronchoalveolar lavage. The use of an extra ultrathin (3.4 mm diameter) bronchoscope can achieve a 69% yield for lesions of 34 mm, using a 17 mm working channel (Oki et al, 2008).

Electromagnetic navigation uses real-time computed tomography images with virtual bronchoscopy and a guide with 360° steering capability. The steps include planning, mapping, navigation and then biopsy. The principal limitation is the cost of the equipment. Overall yields have varied from 59 to 77% despite lesions under 20 mm in size (Hergott and Tremblay, 2010). Combining radial endobronchial ultrasound with electromagnetic navigation can improve yields further, up to 88% in a randomized controlled trial (Eberhardt et al, 2007). Cryobiopsy allows larger bronchoscopic biopsy samples with better integrity and is being explored in peripheral biopsy also (Hetzel et al, 2012).

There are more options now available but market forces, financial constraints and local expertise are likely to dictate which techniques are used to biopsy nodules in the longer term.

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The value of the COMPASS model in postgraduate training

Sir,

During my training in acute medicine and intensive care I came face to face with multiple pathologies and their associated complexities. One thing I realized early on is that with experience doctors often navigate in auto-pilot, as we are all too familiar with the saying 'common things are common'. However, there were several occasions when a patient would present in a non-textbook fashion, and these cases highlight the importance of going back to basics.

The COMPASS curriculum (concept orientated, multidisciplinary, problem based, practice for transfer, simulations in clerkship, streaming) came from McMaster University and serves as a worthwhile platform to solve such clinical dilemmas (Neville and Norman, 2007). It was noted that medical students, whether lecturer or problem-based learning driven, were not gaining the basic science skills required for clinical practice. And it was further noted that in the problem-based learning setting for example, students were concentrating more on clinical relevance than pre-clinical counterparts. The COMPASS model was developed to revolutionize this issue with, for example, students covering respiratory and cardiovascular concerns by studying problems around oxygen delivery.

The delivery of modern medicine is constantly evolving with reliance on evidence-based practice at its forefront. With this we face the dilemma of an environment with little focus on the patient in front of us and his/her intricate physiology. Today's doctors should take note of COMPASS in order to ensure that we engage actively and integrate the relevance of basic science rather than sinking in protocol-driven quick sand.

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Neville AJ, Norman GR (2007) PBL in the undergraduate MD program at McMaster University: three iterations in three decades. *Acad Med* **82**(4): 370–4

Correction

The article *Takotsubo cardiomyopathy* (vol 74(2), 2013, p. 96) was published with the authors in the wrong order. The correct order should have been: Andrew C Morley-Smith, Elmir Omerovic, Alexander R Lyon. We apologize for this error.